



August 6, 2002

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Ms. Sara M Thorton
Center for Devices and Radiological Health (HFZ-460)
Food and Drug Administration
9200 Corporate Boulevard
Rockville, MD 20850

RE: Saint Croix Medical, Inc., (SCM) written response to Implantable Middle Ear Hearing Device; Draft Guidance for Industry and FDA

Dear Ms. Thorton-

This letter constitutes St. Croix Medical's written response to the draft guidance entitled 'Implantable Middle Ear Hearing Device; Draft Guidance for Industry and FDA. For your convenience, this response is provided in triplicate. The location of the text that is being discussed is in bold and precedes the comment regarding that text.

Page 2, Device Description, paragraph 2

It is suggested that PMAs include complete electrical schematics of each functional component; complete mechanical drawings of each functional component; electrical specifications and testing that established that specification; and mechanical specifications and testing that established that specification. SCM believes that this request is inappropriate, burdensome, and unnecessary for establishing the safety and effectiveness of the IMEHD. Electrical schematics of a device are propriety information; instead, a block diagram tracing the signal flow is appropriate. Complete mechanical drawings are also propriety and overly detailed. Sample engineering drawings of key components to provide size information and pertinent details about important mechanical elements should suffice. Establishment of electrical and mechanical specifications are

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part of the concept planning and design input phases of design controls. A procedure covering design controls is more appropriate. Supporting information would be available as part of the design history file.

Page 3, Finite Element Modeling

Finite element modeling (FEM) is suggested for modeling the ear pre- and post-implant. FEM, however, is suitable and provides useful information for simple systems. IMEHDs that implant multiple components are too complex to model appropriately by FEM; if all of the parameters that need to be modeled are not available, the modeling does not provide much value. Rather than recommend FEM, SCM suggests the use of the broad term “modeling”. For example: “FDA recommends performing modeling of the middle ear and implanted system (i.e., temporal bone testing, electrical testing, computer simulation, etc.) along with the use of bench and clinical data for evaluating the system.”

Page 6, Environmental testing

Environmental testing of external components is discussed. FDA should consider recommending application of similar testing, as appropriate, to implanted components of the IMEHD. For example, the reliability and performance of implanted components in conditions that simulated the implanted environment should be recommended.

Page 9, Reliability, paragraph 1

FDA should consider recommending ISO 14971:2000, Medical devices - Application of risk management to medical devices, as a means to achieving the reliability recommendations included in the draft standard. The standard is an FDA recognized consensus standard, and it outlines a risk management process that includes many of the predictive and retrospective analyses that FDA recommends.

Page 9, Reliability, paragraph 3

FDA recommends providing the rationale and test data supporting the selection of electronic components, attachment materials, lead materials, and joining methods and sealing techniques. This recommendation is burdensome and not necessary for

establishing the safety and effectiveness of a device. The quality system regulation in conjunction with design controls covers the selection of components. The test data generated for these components is included in the Design History File. It would be more appropriate to provide representative summaries of typical component qualification data.

Page 10, subject selection criteria

The subject selection criteria section indicates that a description of aided performance should include tolerance levels. It may be more appropriate to adopt standard audiological terms such as Uncomfortable Listening Level to prevent any confusion as to the recommended testing.

Page 10, subject selection criteria, paragraph 3 and Page 13, Self assessment of communicative performance

SCM agrees with FDA's recommendation that the sponsor measure the patients' self-assessment with the IMEHD. We would like to point out, however, that a validated test instrument may not be available for the attributes that are necessary to examine in an IMEHD or one of its features. In fact, Symphonix Devices, Inc., used a company authored, non-validated questionnaire for measuring patient speech perception as a means of determining device effectiveness. In addition, the methods of use for validated instruments may not be appropriate for a medical device clinical investigation.

Page 11, Effectiveness measures and control condition

The draft guidance states that "You should conduct baseline tests that document the benefit associated with alternative state of the art conventional hearing aids." SCM takes issue with this recommendation. The IMEHD should be compared to both the patient's aided and unaided pre-implant condition. The aided pre-implant condition is defined by the patient's own hearing aid that has been best fit to an appropriate standard for three months. This state, which the patient has accepted as a beneficial and clinically useful state, is the definition of a controlled condition. It is not the responsibility of the manufacturer of a IMEHD to demonstrate benefit of yet another commercially available device that the patient himself has not opted to use. In addition, the definition of "state of

the art” is constantly changing; therefore, if the patient has not chosen to “upgrade” his model, it is not necessary for the manufacturer to do so.

Page 12, Pre-implant and Post-implant assessment

The draft guidance included very detailed recommendations on clinical testing. SCM would like for FDA to reiterate in the guidance document that the testing described is recommended and not required. SCM would like to point out that it is up to the sponsor to determine what is appropriate clinical testing based on the device, the patient population, and the indications for the device.

Page 12, audiological assessment

The guidance recommends acoustic immittance measurements. Because acoustic immittance refers to an entire subset of test that may not be appropriate or applicable to the IMEHD that is being studied, SCM recommends that “as appropriate” be added after acoustic immittance.

Page 13, Post-implant testing, paragraph 1

The draft guidance recommends that the manufacturer provide actual system and subsystem data to show that the IMEHD is working within device specifications after device implant. SCM would like to point out that a totally implantable system can only be tested audiological and cannot be separated into subsystems once the device is implanted. The guidance should be updated to say “if appropriate” for subsystem testing.

Page 13 post -implant testing , paragraphs 2, 3, 4

The testing listed in these paragraphs is not clinical testing but is bench testing. This section of recommendations should be moved to the preclinical information section.

Page 13, Post-implant testing, paragraph 2

A description of the overall system vibrational output as a function of sound input including gain, phase, and frequency response is recommended. SCM would like to point out that the characteristics listed, while appropriate for hearing aids, may not be appropriate for IMEHD. Phase, for example, can be highly variable depending on the

IMEHD's programmed settings and the effects upon total phase shift caused by the input and output transducers. Manufacturers should determine what testing is the most appropriate for the device and the therapy the IMEHD provides.

In addition, while SCM agrees that device manufacturers should describe the overall system vibrational output of the IMEHD (described as the vibrational out as a function of electrical input in the draft guidance), we would like to caution that bench testing will not necessarily be comparable from device to device. The means of signal capture, device attachment, and where output is measured will vary for partially implantable and fully implantable IMEHDs. Therefore, results will not be comparable from manufacturer to manufacturer, and FDA should not evaluate the data as "apples to apples" comparisons.

Page 14, surgical concerns

The draft guidance recommends that the manufacturer specify the type of anesthesia for the implant and that the manufacturer describe the pre- and post-surgical care that for each subject. SCM believes that the any recommendation beyond local or general anesthesia is beyond the scope of expertise of a device manufacturer. FDA should either clarify what level of information that is requested, or leave such determinations to the trained physician.

Page 15, clinical results

The draft guidance recommends that tabulations of data from all individual case report forms be provided in the clinical report. The guidance then presents an example table that provides information for each subject. It would appear that FDA is asking for considerable patient level data in the clinical report. If this is not the case, the section should be clarified. If in fact FDA is asking for such patient level data, SCM would like to know why this level of detail is necessary and what is the intent of gather such large amounts of data. SCM believes that providing patient level data would be burdensome on both FDA reviewers and the manufacturer and would recommend summary tables providing averages, standard deviations, and sample sizes as the best option for presenting the majority of the data collected in an IMEHD clinical investigation.

These same comments also apply to the request for copies of CRFs for each subject who did not complete the study. SCM questions the benefit of this request and the purpose of including this information. When writing clinical reports for life sustaining devices, it is customary to include the CRFs of all patients who died while participating in the study along with a death summary provided by the investigator. Because IMEHDs are not life sustaining devices, SCM questions the purpose and value of this additional request.

Page 17, Appendix A informed consent

The draft guidance lists risks and indicates that the informed consent “should include” these risks. SCM believes the sentence should be rewritten as “For an IMEHD, these could include...” In addition, disarticulation of the ossicular chain is listed as a risk. Disarticulation is a requirement for some fully implantable systems; therefore, SCM believes “if appropriate” should be added following that risk.

Page 18, Package Insert, bullet point 5

The draft guidance states that the package insert should contain the expiration date. SCM believes that the package label is the most appropriate and useful location for expiration dating and that including it on inserts, which are mass produced versus labels which are generated as each device is manufactured and packaged, is burdensome. The information on the package label is the most accessible location for the OR staff. Other implantable medical devices (such as pacemakers, defibrillators, etc.) include the expiration dating on the package label only.

Page 19, contraindications

Examples of contraindications for IMEHDs are listed including conductive hearing loss. SCM believes this example should be removed and replaced with a different example because an IMEHD could be used to treat conductive hearing loss, and listing that condition in the guidance under this section would cause confusion and be medically incorrect.

Page 20, Package insert, clinical considerations and information for use and recommended training

Including the clinical considerations and information for use and recommended training in the package insert will make the insert unduly long and not provide physicians and audiologists this important information in the most useful location. This information should be included in the Operator's Manual which is a more thorough, indexed and long-lasting medium for information of this importance.

Page 22, Patient information brochure, bullet point 9

The guidance recommends that the patient brochure describe the surgical alternatives and the benefits and risks of each. SCM believes that a device manufacturer is only authorized to describe the risks and benefits of the devices that they have developed and tested; i.e., their own. Manufacturers should not practice medicine and interpret other manufacturer's results; instead, it is the responsibility of the physician to provide this information to the patient. The patient brochure should indicate that other conventional and IME hearing devices are available and that these alternatives should be discussed with their physician and/or audiologist.

This ends SCM's response to the draft guidance. If FDA would like further information or to discuss the contents of this letter, please feel free to contact Jennifer May by phone at (763) 502-1271, by fax at (763) 502-0554, or by email at may@stcroixmedical.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jennifer May", with a stylized flourish at the end.

Jennifer May

Senior Regulatory Affairs Associate

St. Croix Medical, Inc.